

Rule :

If the number of columns of A is equal to the number of rows of B.
Then only the multiplication of A and B is possible.

Example :

If $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 3 \\ 4 & 1 \end{pmatrix}$ Find AB.

Solution :

$$AB = \begin{pmatrix} 1 \times 2 + 2 \times 4 & 1 \times 3 + 2 \times 1 \\ 3 \times 2 + 4 \times 4 & 3 \times 3 + 4 \times 1 \end{pmatrix}$$

$$\Rightarrow \begin{pmatrix} 2 + 8 & 3 + 2 \\ 6 + 16 & 9 + 4 \end{pmatrix}$$

$$\Rightarrow \begin{pmatrix} 10 & 5 \\ 22 & 13 \end{pmatrix}$$